

**ABSTRACT**

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***POLYMER COMPOSITES FOR BIOMEDICAL APPLICATIONS AND  
METHODS OF MAKING***

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A biomedical polymer composite that exhibits ultra-low thermal conductivity properties. In a preferred embodiment, the biomedical polymer composite comprises a base polymer component with a dispersed thermally non-conductive filler component consisting of glass or ceramic nanospheres or  
15 microspheres that have a thermal conductivity of less than 5 W/m-K, and preferably less than 2 W/m-K. In one embodiment, the polymer composite is has an electrically conductive filler and can be used in a filament for treating arteriovascular malformations. In another embodiment, the polymeric composite can be used as an energy-coupling means to apply energy to tissue.